

Appl. No. : 09/460,630
Filed : December 14, 1999

REMARKS

The January 24, 2003 Office Action was based upon pending Claims 1-11 and 13. This Amendment amends Claims 1 and 13. Thus, after entry of this Amendment, Claims 1-11 and 13 remain pending and presented for further consideration.

Drawings

The Examiner objected to the drawings under 37 CFR 1.83(a) as not showing every feature of the invention specified in the claims. The amplifier is shown in each and every figure as a transistor 32. Therefore, Applicants do not understand the objection, and no changes to the drawings would appear to make sense.

Claim Rejections

In the January 24, 2003 Office Action, the Examiner rejected Claims 1-11 and 13 under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Further, Claim 13 is rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

An active pixel is a pixel configured with circuitry integrated in the pixel to amplify the charge that is collected on the light sensitive element or component in the pixel (See p.1 1.21-22 of the present patent application). The description points out that the present invention relates to active pixels (p.1 1.9-10: "The present invention relates to active pixel solid state photosensors and imagers using CMOS technology"). In all the figures, a transistor 32 is shown in an amplifier configuration which is coupled to the detection region 26 (see page 6, line 24, 25). An amplifier is depicted in the drawings and disclosed in the specification. Therefore, claims 1 and 11 do not contain subject matter, more specifically the amplifier integrated in the pixel structure, which was not conveyed to one skilled in the art at the time of filing the application.

Claim 13 has been revised so as not to refer to "said second region", but to refer to "said detection region." Withdrawal of the rejections is requested.

The Examiner further rejected Claims 1 and 4-6 under 35 U.S.C. §103(a) as being unpatentable over Miwada '719 in view of Dyck '228. The Examiner has taken the position that

Appl. No. : 09/460,630
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the Miwada discloses a solid state imaging device, but does not disclose an amplifier integrated in the pixel, but that the recitation "active CMOS pixel structure" has not been given patentable weight because it is in the preamble.

The applicant does not intend to claim all pixel structures, only the active CMOS pixel structures. Applicant, has therefore, amended the Claim to place the limitation in the body of the specification.

As previously stated, Miwada '719 describes a CCD device, as can be seen from Fig. 2 where a clock signal CLK is applied to the gate electrode 6c. Furthermore, this is also explained in the description, column 1, lines 47-53: "A phase-one transferring clock signal CLK1 and a phase-two transferring clock signal CLK2 are selectively supplied to the gate electrodes 6a to 6g, and the n-type impurity region NR2 and the gate electrodes 6a to 6g as a whole constitute a multi-stage vertical shift register 7 of the CCD type." Miwada '719 thus is clearly restricted to CCD, and the present invention relates to active pixel CMOS structures. Where the applicant's specification refers to CCD (p.7 l.11-18), it is in the context of the junctions, and not with the principle of CCD operation as such: "any photocollection junction can be used, for example photocollection junctions as used in CCD". It is not intended to claim a CCD structure. A typical feature for a CCD structure is the overlapping electrodes used to control charge transfer. Contrary to what the Examiner alleges, none of the drawings of the present patent application refer to such a CCD structure. No such overlapping electrodes, typical for CCD, can be found in the drawings.

Furthermore, claim 1 recites: "... and by a second voltage for transferring the charges from the collection region INTO a detection region" (emphasis added). The transfer of charges is thus into the detection circuitry. This is not the case in a CCD structure, where charges are transferred to another pixel, not directly from where they are collected into a detection region.

Accordingly, the present invention is not obvious in view of Miwada '719. Miwada '719 does not disclose storing any charges under the electrode for normal image production. Any stray charges which remain there are considered to be ghost images. The present invention, to collect the charges in the collection region under the electrode, up to a moment when they are transferred to the detection region, i.e. to detection circuitry for normal display of the image.

The Examiner further rejected Claims 2, 3, 7, 8, and 13 under 35 U.S.C. §103(a) as being unpatentable over Miwada '719 in view of Dyck '228 as applied to Claims 1 and 4-6 above, and further in view of Kuroda, et al., '013. Claims 9-11 are rejected under 35 U.S.C. §103(a) as

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being unpatentable over Miwada '719 in view of Dyck '228 as applied to Claims 1 and 4-6 above, and further in view of Hook, et al., '702 B1. These claims depend from an allowable base claim. Thus, for at least the reasons stated above, these claims are allowable.

CONCLUSION

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In light of the above remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested.

Any claim amendments which are not specifically discussed in the above remarks are not made for patentability purposes, and it is believed that the claims would satisfy the statutory requirements for patentability without entry of such amendments. If the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, the Examiner is respectfully requested to initiate the same with the undersigned.

Respectfully submitted,

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